

North American Utilities & IPPs

Water on Wall Street: Takeaways from Our Inaugural Conference

Industry Overview

Splashing into the Water Industry

On Thursday, we hosted our <u>Inaugural Water on Wall Street Conference</u> in New York City with AQUA, AWK, AWR, CWT, HASI, MSEX, SJW, WTR, and YORW as well as a number of state regulators and industry experts. There were a variety of panels throughout the day with updates from company mgmt. and latest thoughts on trends and the state of the water industry. Key themes included what to make of emerging contaminates and expectations for further consolidation across the water industry against a backdrop of accelerating legislation momentum and stressed municipalities. Open the note for full takeaways.

Legislation, Infra Pressures to Drive Consolidation

Across the panels, speakers continuously emphasized the incredibly fragmented nature of the water industry. There are over 50K community water systems in the US, ~85% of which are publicly owned. This translates to a modest share for IOUs, particularly when contrasted with electric and gas (~3,000 electric utilities, the majority of which are structured as IOUs) and we increasingly view a clear cut opportunity for continued consolidation across the space. Given limited governmental funds and rising pension liabilities, we perceive a growing struggle around muni's abilities to inject the investments needed to maintain the water systems (with at least 1,200 systems deemed to be non-compliant with regards to the safe water act). Enabling legislation continues to pick up across states with FMV (FL likely to introduce next) & Single Tariff legislation gaining momentum and the Water Accountability Act starting to emerge (with IN following NJ's lead). We see this as creating a perfect backdrop to enable acquisitions albeit not all of these states are created equal - with capital likely to flow to the most constructive jurisdictions. Meanwhile, discussions highlighted more limited participation from private equity players with underexposure to the space and a slower momentum around P3s in the US relative to other countries. Bottom line, we continue to expect an acceleration of tuck in acquisitions for the IOUs. One critical guestion is whether a constructive outcome with JEA in FL will drive more large acquisitions going forward.

Contemplating Emerging Contaminants

Another key focal point all day at the conference was around emerging contaminants and how they are changing the industry. Relative to the more publicized fire risks facing electric utilities, contamination is a critical – and likely still underappreciated - risk for the water industry. The EPA has currently established health advisory levels for PFAs at 70 parts per trillion, and concerns were voiced around how commissions will treat investment without a more clear cut standard. A handful of states have already started setting their own levels of stricter standards, and we perceive it as a likely driver of capital investment as awareness continues to be raised. While costs to treat will vary widely depending on technology and what contaminants are in the water, we perceive it as around \$0.02-\$0.10 per thousand gallons (note that AWK processes 1 billion gallons of drinking water daily). Bottom line, we would expect this to increasingly be a capital investment consideration and a potential driver for consolidation longer term as a more standard set of guidelines are adopted and municipalities are forced to comply.

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Timestamp: 13 December 2019 07:39AM EST

13 December 2019

Equity North America Utilities & IPPs

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NYAW: New York American Water

JEA: Jacksonville Electric Authority

How do we think about the sector?

Growth remains consistently robust and the merits of a premium to the electric and gas peers remains clear. We perceive the latest re-rating higher as preventing consolidation more broadly, but could very see a return to consolidation should sector valuations normalize closer to historic norms (on corporate side). That said, municipal deals will continue, albeit always on a protracted basis given the local approvals typically required. We perceive the sector as among the single highest quality within our coverage universe albeit with valuations (earnings yields) approaching that of the cost of debt, it's hard to see how re-rating improves barring significant shifts in interest rates lower. We maintain our Buy rating on WTR and Underperform on AWK.

So what do we recommend?

Despite the latest underperformance this week, we continue to stress the premium valuations ascribed to the water sector broadly, with the group still trading at 25.6x 2022 estimates (vs. electric and gas peers both trading at 18.5x). While we appreciate the scarcity element and visibility into longer term growth, we see risk as underappreciated at these levels – despite growing attention to contamination. We remain Underperform rated on shares of AWK, with estimates coming down out of their latest Analyst Day, and our concerns for convergence of sector multiples. Meanwhile we highlight our Buy rating on shares of WTR given their discrete opportunities into the expected closing of the Peoples Gas transaction; we perceive an upward bias to estimates upon implementation of the Repairs tax.

Water Universe

Table 1: Water Universe

								P/E Mu	<u>Itiples</u>				Earnings	per Shar	<u>e</u>	_
	Ticker	Market Cap	EV	Short Int	Days	2018A	2019E	2020E	2021E	2022E	2018A	2019E	2020E	2021E	2022E	CAGR
Water Utilities																
American Water	AWK	21,409	31,584	2.2%	4.4	35.9x	33.3x	30.4x	27.9x	25.7x	3.30	3.56	3.89	4.25	4.61	8.7%
Aqua America	WTR	9,739	10,749	6.0%	5.2	32.0x	34.7x	26.2x	26.1x	24.8x	1.41	1.30	1.72	1.73	1.82	6.6%
SJW Group	SJW	2,005	2,092	0.8%	2.2	33.6x	39.6x	30.6x	27.0x		2.10	1.78	2.31	2.61		7.6%
Artesian Water	ARTNA	342	492	0.5%	3.4											
Connecticut Water Service																
Middlesex Water Company	MSEX	1,100	1,328	2.6%	4.5	32.2x	32.3x	31.4x	29.7x	26.4x	1.96	1.96	2.01	2.13	2.39	5.1%
California Water Services	CWT	2,423	3,479	3.9%	9.5	40.4x	35.1x	31.7x	29.2x		1.25	1.43	1.59	1.72		11.4%
The York Water Co	YORW	583	668	1.6%	6.9	44.4x	39.0x	37.7x	35.0x		1.01	1.15	1.19	1.28		8.2%
American States Water	AWR	3,178	3,789	4.6%	7.8	49.6x	42.1x	40.2x	37.8x	33.8x	1.74	2.05	2.15	2.28	2.55	10.0%
Average (ex AWR/YORW)		37,018		2.6%	4.9	34.8x	35.0x	30.1x	28.0x	25.6x		0.1%	14.8%	8.1%	8.8%	7.9%

Source: BofA Global Research, Bloomberg

Regulatory updates

Speakers highlighted views that surcharges including Distribution System Investment Charge (DSIC) programs are critical for return on capital that can be reinvested in future infrastructure projects. Commissions seem to be considering more innovative tools to help as well, whether DSICs, decoupling, or future test years. Commissioners also look to NJ and other states that are considering implementing water quality accountability standards – particularly to level the playing field and ensure smaller and medium-sized utilities keep in line with the same standards as IOUs. We see reducing lag for AWK in its core geographies remains a strategic priority with 59% tracked – and a return to lag in '20 thru rate cases emphasizing this need in particular. Regulatory support across key states remains clear and all the more pressing given litany of water quality issues lingering including lead, arsenic, and now proliferation of PFAS materials (principally fire retardants used that stay in environment; a particular issue on military installations).

We perceive legislation such as Fair Market Value legislation, Single Tariffs, and the Water Quality Accountability Act will all continue to gain momentum, setting up opportunities for further consolidation. We look to Texas as another evolving geography to watch for potential consolidation, especially for Aqua America.



Company Highlights

We include our latest company takeaways below:

Aqua America (WTR - Buy, A-1-7, \$45.12)

WTR continues to await final approval for the pending Peoples gas acquisition, which we would expect to come over the next several weeks. Upon close, mgmt noted a path to growing the gas rate base at 8-10% for 15-20 years, a faster pace than the organic 7% that the company expects from the water biz. Nonetheless, mgmt highlighted their continued appetite for water and remains bullish on acquisition opportunities (Recall the company announced the acquisition of DELCORA following the initial Peoples transaction, which will already dilute down the 70-30 mix of water-gas that is expected upon close). We perceive less likelihood of mgmt further diversifying away from the proforma water & gas portfolio, with the company particularly talking down interest in anything non-regulated. Further – despite the recent move by peer AWK to optimize their portfolio and divest of NYAW and Keystone – we see more of a willingness from WTR to continue to pursue the thriving municipal market. When it comes to entering new territories, mgmt continues to suggest visibility to 30K customers in the state before jumping in. On the other hand, after previously exiting Florida operations, the company noted a lack of interest in pursuing JEA, and we don't expect the state as a likely candidate to grow the footprint (despite the pending FMV legislation). Following the close of the Peoples transaction, we expect the conversation to shift more towards Repairs Tax (and quantifying the impact given limited new details at this point), which we see as a critical driver of earnings and the reason we remain above the street. Reiterate Buy given upside to estimates.

American Water Works (AWK – Underperform, A-3-7, \$118.43)

Following their Analyst Day earlier in the week, AWK highlighted their latest five-year plan of \$8.8-\$9.4Bn, which is \$800Mn higher than the previous five-year plan. The company has also laid forward longer term visibility with a ten-year plan of \$20-\$22Bn for 2020-2029. With the latest guidance, mgmt. reiterated their expectations for 2019 EPS of \$2.56-\$3.64 while launching 2020 EPS guidance of \$3.79-\$3.89. Despite the recently announced pending sales of Keystone and NYAW assets, mgmt. has clearly articulated that they don't plan to sell off any additional assets, and the company should be poised to capitalize on the growing trend of M&A amid the latest momentum of legislation & compliance requirements. We further stress the recent decision to de-lever the balance sheet as providing additional flexibility to pursue acquisitions. That said, we reiterate our Underperform rating given the lofty valuation.

American States Water (AWR - Not Rated)

American States Water Company (AWR) is a consolidated low volatility water company that operates through 2 subsidiaries; 1) Golden State Water Company (GSWC) and; 2) American States Utility Services (ASUS). GSWC is a regulated water and electric utility the serves 261,000 and 24,000 customers across California, respectively. Meanwhile, ASUS is a contracted service for water/wastewater systems that serves military bases under 50-year contracts. The EPS breakdown is 76% GSWC (8% belonging to the electric utility with the other 24% coming from ASUS). The company expects to have continued military success as it won two RFP's for military bases over the past two years. Although the company operates an electric utility in California, mgmt is not overwhelmingly concerned about wildfire risk given the system does not contain any transmission lines and is also at 7,000ft of elevation (less winds). AWR emphasized that it has been able to continue to seek the benefits of forward test years.

California Water Service Group (CWT - Not Rated)

CWT mgmt. discussed the company's growth priorities, rate setting backdrop, and unique regulatory environment in the state. CWT recently filed a settlement with the CPUC in the company's general rate case which includes \$609Mn of new capital spend



and \$200Mn of authorized improvements spent in prior years – mgmt. notes this represents 85% of the company's ask, an improvement over the 80% established in the previous case. The company had been expecting a settlement before the end of the year but mgmt. now expects the timeline to be pushed to Q1 2020 given the ongoing PCG situation remains the top priority for the CPUC. Mgmt. flagged that the company actively works with regulators to remain in sync with state priorities, highlighting its decoupling mechanism as generally supportive of state water conservation efforts - in particular in light of the drought conditions seen during the previous decade. In terms of M&A (mgmt. has made tuck-in acquisitions in the past year in Washington state and Hawaii), the company sees systems with 1,000 – 5,000 customers as its target range. CWT plans to file its Cost of Capital with the CPUC next May, as public water utilities in the state synchronize their filings – mgmt. expects an improved cost of debt (4.5% currently vs 5.5% in the previous filing) to provide some headroom in the upcoming filing. Inverse Condemnation remains a risk for water utilities though not to the extent that it affects electric utilities. While water availability remains an issue in Western states including California, supply for residential and commercial customers is a lesser concern in mgmt's view with 80% of California demand driven by agricultural customers.

Middlesex Water (MSEX - Not Rated)

MSEX mgmt. expects to deploy \$325m in capital in 2019-21 in its New Jersey and Delaware service territories. The spending will be driven by three projects including a Western Transmission Main (\$50m), new treatment plant (\$70m), and unlined and aging pipe replacement (\$35m). The total plan is forecast by mgmt. to grow to \$1.18 by YE 2021 with an approximate \$800/300 split between NJ and DE. MSEX remains open to consolidating smaller municipal systems, having recently acquired a 1000-customer system in Delaware. While the company has not articulated a formal goal for EPS growth in the forecast period, mgmt. does expect its DPS payout ratio to increase from 49% in 2019 to a range of 65-70% in the coming years. MSEX is subject to a Distribution System Improvement Charge (DSIC) in both its NJ and DE jurisdictions which allows accelerated recovery of certain pre-approved investments subject to a cap. Mgmt does not anticipate approaching its 7% cap in Delaware in the near term owing to the system's relatively young age.

SJW Group (SJW - Not Rated)

SJW Group has completed transformative M&A activity – amounting up to 40 acquisitions in the last 10 years alone. The company sees these purchases as great for diversification when it comes to location (the company sits across four states), regulatory environment, weather, and availability of water; SJW Group sees diversification as a level of comfort and safety. Each geograpy provides different benefits: Silicon Valley, CA represents 60% of earnings, the Austin-to-San Antonio, TX region grew 16% last year (8% organically and the rest through M&A), and the CT and ME communities provide what SJW sees as the best in class regulatory relationships. The company has increased its payout ratio in recent years to increase its competitiveness with other companies. Finally, we note the company now has the third largest pure-play water utility ratebase in the country.

The York Water Co (YORW – Not Rated)

The York Water Company (YORW) is a water utility that serves customers ~200K across the state of Pennsylvania and is currently the oldest stock that trades on the NYSE (founded in 1819); The company currently has a 42/57% debt/equity ratio coupled with an A- credit rating from S&P. The company also has an average demand of 20Mn gallons of water per day (vs. 40Mn capacity) and is replacing 1% of its infrastructure per year (based off a 100yr rate). Of all of the publicly traded water companies YORW is the most expensive; it trades at 35x '21 earnings vs. the comp set avg of ~29x (inclusive of YORW). In addition to its water utility services, the company also owns and operates wastewater collection systems, which mgmt thinks will grow near-term given constructive legislation in the states (Act 11). The act ultimately combines water and wastewater revenue into one – meaning that the company can now buy a wastewater



system and allocate the cost over all its customers, thus preventing rate shock. Further positive legislation in the state includes Act 120 which allows the company to replace led lines at no cost to the customer. Mgmt emphasized that their presence in one state – and a constructive one at that – as a key advantage relative to larger peers.

PE investment in water infrastructure

Broadly, private equity investment in infrastructure has increased at a 16% CAGR over the last 10 years, to nearly \$500bn by 2018 (incl. \$312bn unrealized value, \$179bn dry powder). This has resulted in upward pressure to valuations on private infra asset valuations, while fundamental valuations have not changed materially, given the tremendous amount of capital looking to be deployed. Water assets, however, have seen limited activity, averaging only 2.8% of annual infrastructure deal flow (3% water in 2018). Select opportunities do exist in certain areas including industrial water, water-as-a-service, technology deployment, and on-site residential wastewater.

We see this as driven by a number of challenges to water investment. These include:

- Investment size: Few opportunities in the \$200-\$500mn EV range, with the
 market generally divided between larger publicly traded companies and
 municipal assets as well as many much smaller systems. Roughly 56% of
 systems serve less than 500 customers, representing only 1.6% of people
 served.
- 2. **Rising valuations:** Many assets reaching above 2x rate base valuations
- 3. Change of control regulations: Commissions skeptical of the PE model
- 4. **Limited flow of Public-Private Partnerships:** Municipalities have shown limited willingness to privatize facilities
- 5. **Diverse asset class:** Wide range of opportunities including IOUs (investorowned utilities), water technologies, wastewater, water-as-a-service, etc.
- 6. Political-related issues

Storm Water Remediation

We highlight sustainable infrastructure opportunities as including stormwater remediation, environmental restoration, and water & wastewater infrastructure. Within wastewater infrastructure, the American Society of Civil Engineers estimates \$271bn of needed facility upgrades in order to meet demand of an incremental 56mn users by 2032, while \$1tn may be needed to update and upgrade water infrastructure.

HASI sees opportunities within storm water remediation, including \$7mn investment in four projects to slow pollution runoff into downstream waterways in the Chesapeake Bay area. Waterway restoration and wetland mitigation credits are another opportunity: credits are generated through state or private restoration projects, and then banked and sold to offset environmental impact. In addition to the Chesapeake Bay and Great Lakes areas, these have some prevalence in the Gulf Coast with refineries needing to mitigate the impact on land in order to obtain permits for construction.

Public sector funding poses various limits. Federal funding includes the WIFIA (Water Infrastructure Finance and Innovation Act of 2014) program, which only funds 49% of the project cost, with a 35-year maximum duration. While state revolving funds have a low cost of capital with a 30-year maximum loan term, projects are ranked with preventative maintenance and plant expansion not considered to be a priority. Taxexempt funding sources need voter approval and also take time to implement.

Private capital is also available for infrastructure funding purposes, with water public-private partnerships (P3) an option, although we note these can be challenging to find given a limited number of opportunities as well as municipal hesitancy. Specifically, P3s are contracts that allow a private partner to construct, upgrade, operate, and/or manage



a public service facility or system while investing capital, while the public entity remains ownership; income generated is shared between the two parties.

While HASI did not specify return criteria for their water investments, we note that their sustainable infrastructure portfolio yields 5.6% while their BTM portfolio has an 8.0% yield; their overall portfolio yield is 7.7% as of 3Q19. HASI expects water returns to increase over time given an underserved market with pressure for infrastructure investment to build in this market.

Price objective basis & risk

American Water Works (AWK)

Our PO for American Water Works is \$130. We apply a 26.0x P/E multiple to American Waters 2022E earnings based on the water peer multiple and a 8.3% group EPS CAGR for '18-'22, as we see AWK largely driving the peer multiple as the largest publicly traded water utility.

Risks to the downside are increase in market interest rates, potential impact of tax reform on utilities, operational errors, changes in valuation levels for water utilities. Risks to the upside are accelerating muni acquisitions, multiple expansion, and constructive legislation in regulatory jurisdictions.

Aqua America (WTR)

Our price objective is \$47 based on our SOTP approach, applying a peer multiple to the water utility and gas utility, respectively and accounting for expected growth for each sector. We apply a 0.5x discount to Peoples Gas as we expect earned ROEs to be driven down over time. We net out parent debt and parent interest expense associated with parent debt 50/50 weighed basis.

Risks to the downside are acquisition risk, deteriorating regulatory outcomes, and risks from a lower rerating following the diversification into gas.

Analyst Certification

I, Julien Dumoulin-Smith, hereby certify that the views expressed in this research report accurately reflect my personal views about the subject securities and issuers. I also certify that no part of my compensation was, is, or will be, directly or indirectly, related to the specific recommendations or view expressed in this research report.





North American Utilities, Alternative Energy & LNG Coverage Cluster

Investment rating	Company	BofA Ticker	Bloombergsymbol	Analyst
BUY				
_	Alliant Energy Corporation	LNT	LNT US	Julien Dumoulin-Smith
	AltaGas	YALA	ALA CN	Julien Dumoulin-Smith
	Ameren Corporation	AEE	AEE US	Julien Dumoulin-Smith
	American Electric Power	AEP	AEP US	Julien Dumoulin-Smith
		WTR	WTR US	
	Aqua America			Julien Dumoulin-Smith
	Atlantica Yield	AY	AYUS	Julien Dumoulin-Smith
	Black Hills Corporation	BKH	BKHUS	Julien Dumoulin-Smith
	Cheniere Energy Inc	LNG	LNG US	Julien Dumoulin-Smith
	Clearw ay Energy	CWENA	CWEN/A US	Julien Dumoulin-Smith
	Clearw ay Energy	CWEN	CWEN US	Julien Dumoulin-Smith
	CMS Energy	CMS	CMSUS	Julien Dumoulin-Smith
	Emera Inc	YEMA	EMA CN	Julien Dumoulin-Smith
	Entergy	ETR	ETR US	Julien Dumoulin-Smith
	Exelon	EXC	EXC US	Julien Dumoulin-Smith
	First Solar, Inc.	FSLR	FSLR US	Julien Dumoulin-Smith
	Nex tEra Energy	NEE	NEE US	Julien Dumoulin-Smith
	NRG Energy	NRG	NRG US	Julien Dumoulin-Smith
	OGE Energy Corp	OGE	OGE US	Julien Dumoulin-Smith
	PNM Resources Inc.	PNM	PNM US	Julien Dumoulin-Smith
	Sunnov a Energy	NOVA	NOVA US	Julien Dumoulin-Smith
	SunRun	RUN	RUN US	Julien Dumoulin-Smith
	Vistra Energy	VST	VST US	Julien Dumoulin-Smith
	Visita Effetyy Vivint Solar	VSLR	VSLR US	Julien Dumoulin-Smith
MEHTDAL	v IV IIIL OUIAI	VOLN	VOLIN UO	Juliell Dulliouilli-Ollilli
NEUTRAL	150	150	450110	
	AES	AES	AESUS	Julien Dumoulin-Smith
	Algonquin Power & Utilities Corp	AQN	AQN US	Julien Dumoulin-Smith
	Algonquin Pow er & Utilities Corp	YAQN	AQN CN	Julien Dumoulin-Smith
	CenterPoint Energy	CNP	CNPUS	Julien Dumoulin-Smith
	Consolidated Edison	ED	ED US	Julien Dumoulin-Smith
	Dominion Energy	D	DUS	Julien Dumoulin-Smith
	DTE Energy	DTE	DTE US	Julien Dumoulin-Smith
	Edison International	EIX	EIX US	Julien Dumoulin-Smith
		FE	FE US	Julien Dumoulin-Smith
	FirstEnergy			
	Fortis	YFTS	FTS CN	Julien Dumoulin-Smith
	Fortis Inc	FTS	FTSUS	Julien Dumoulin-Smith
	Hannon Armstrong	HASI	HASI US	Julien Dumoulin-Smith
	ldacorp	IDA	IDA US	Julien Dumoulin-Smith
	Nex tDecade	NEXT	NEXT US	Julien Dumoulin-Smith
	Nex tEra Energy Partners	NEP	NEP US	Julien Dumoulin-Smith
	NiSource Inc	NI	NIUS	Julien Dumoulin-Smith
	Pinnacle West	PNW	PNWUS	Julien Dumoulin-Smith
	Portland General Electric Company	POR	POR US	Julien Dumoulin-Smith
	PPL Corporation	PPL	PPL US	Julien Dumoulin-Smith
	Public Service Enterprise Group	PEG	PEG US	Julien Dumoulin-Smith
	Sempra Energy	SRE	SRE US	Julien Dumoulin-Smith
	Southern Company	SO	SOUS	Julien Dumoulin-Smith
	Tellurian Inc	TELL	TELL US	Julien Dumoulin-Smith
JNDERPERFORM				
	American Water Works	AWK	AWK US	Julien Dumoulin-Smith
	Av angrid	AGR	AGR US	Julien Dumoulin-Smith
	Avista	AVA	AVAUS	Richard Ciciarelli, CFA
	Bloom Energy	BE	BEUS	Julien Dumoulin-Smith
	. ,			
	Duke Energy	DUK	DUKUS	Julien Dumoulin-Smith
	Evergy, Inc	EVRG	EVRG US	Julien Dumoulin-Smith
	Eversource Energy	ES	ESUS	Julien Dumoulin-Smith
	Haw aiian Electric Industries	HE	HE US	Julien Dumoulin-Smith
	NorthWestern Corporation	NWE	NWE US	Julien Dumoulin-Smith
	SunPow er Corp.	SPWR	SPWR US	Julien Dumoulin-Smith
	Terraform Power	TERP	TERPUS	Julien Dumoulin-Smith
	Unitil Corporation	UTL	UTLUS	Julien Dumoulin-Smith
	WEC Energy Group Inc	WEC	WEC US	Julien Dumoulin-Smith
	Xcel Energy Inc	XEL	XEL US	Julien Dumoulin-Smith
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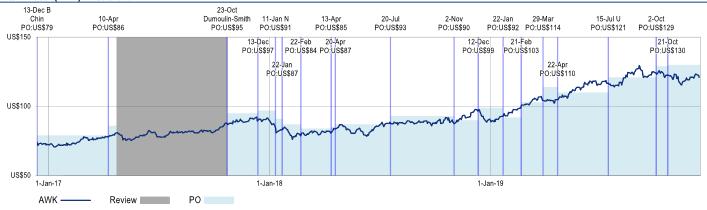
North American Utilities, Alternative Energy & LNG Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
	Pattern Energy Group	PEGI	PEGIUS	Julien Dumoulin-Smith

Disclosures

Important Disclosures

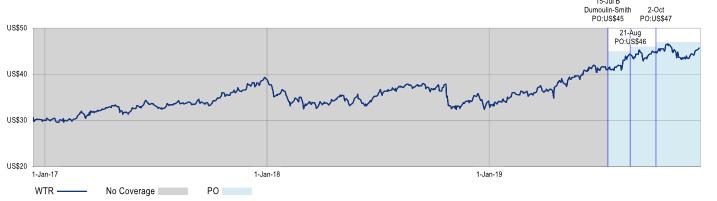
American Water (AWK) Price Chart



B: Buy, N: Neutral, U: Underperform, PO: Price Objective, NA: No longer valid, NR: No Rating

The Investment Opinion System is contained at the end of the report under the heading "Fundamental Equity Opinion Key". Dark grey shading indicates the security is restricted with the opinion suspended. Medium grey shading indicates the security is under review with the opinion withdrawn. Light grey shading indicates the security is not covered. Chart is current as of a date no more than one trading day prior to the date of the report.

Agua America (WTR) Price Chart



B: Buy, N: Neutral, U: Underperform, PO: Price Objective, NA: No longer valid, NR: No Rating

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Equity Investment Rating Distribution: Utilities Group (as of 30 Sep 2019)

Coverage Universe	Count	Percent	Inv. Banking Relationships*	Count	Percent
Buy	67	47.86%	Buy	51	76.12%
Hold	36	25.71%	Hold	24	66.67%
Sell	37	26.43%	Sell	26	70.27%

Equity Investment Rating Distribution: Global Group (as of 30 Sep 2019)

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Coverage Universe	Count	Percent	Inv. Banking Relationships*	Count	Percent
Buy	1517	50.30%	Buy	964	63.55%
Hold	680	22.55%	Hold	434	63.82%
Sell	819	27.16%	Sell	408	49.82%

* Issuers that were investment banking dients of BofA Securities or one of its affiliates within the past 12 months. For purposes of this Investment Rating Distribution, the coverage universe includes only stocks. A stock rated Neutral is included as a Hold, and a stock rated Underperform is included as a Sell.



FUNDAMENTAL EQUITY OPINION KEY: Opinions include a Volatility Risk Rating, an Investment Rating and an Income Rating. VOLATILITY RISK RATINGS, indicators of potential price fluctuation, are: A - Low, B - Medium and C - High. INVESTMENT RATINGS reflect the analyst's assessment of a stock's: (i) absolute total return potential and (ii) attractiveness for investment relative to other stocks within its Coverage Cluster (defined below). There are three investment ratings: 1 - Buy stocks are expected to have a total return of at least 10% and are the most attractive stocks in the coverage cluster; 2 - Neutral stocks are expected to remain flat or increase in value and are less attractive than Buy rated stocks and 3 - Underperform stocks are the least attractive stocks in a coverage cluster. Analysts assign investment ratings considering, among other things, the 0-12 month total return expectation for a stock and the firm's guidelines for ratings dispersions (shown in the table below). The current price objective for a stock should be referenced to better understand the total return expectation at any given time. The price objective reflects the analyst's view of the potential price appreciation (depreciation).

Investment rating	Total return expectation (within 12-month period of date of initial rating)	Ratings dispersion guidelines for coverage cluster*
Buy	≥ 10%	≤ 70%
Neutral	≥ 0%	≤ 30%
Underperform	N/A	≥ 20%

^{*} Ratings dispersions may vary from time to time where BofA Global Research believes it better reflects the investment prospects of stocks in a Coverage Cluster.

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